Rewarding Risk: Exploring How to Encourage Learning that Comes from Taking Risks

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Abstract

High-stakes testing that became the norm after the No Child Left Behind Act of 2001 helped condition students to strive for correct answers for clear problems, all on the first try. However, the iterative process inherent in designing requires risk-taking to conduct a trial-and-error process of defining problems and exploring possible solutions. This design research project was operated with Miami University Graphic Design students to test their willingness to take risks in their coursework to achieve their self-defined measures of success. Students identified that improving their skills was how they defined success. An interaction design assignment involving front-end coding was modified to test students' comfort taking risks to grow their skills. Most students took risks in the assignment to grow their interaction design skills. The project revealed that closer attention to student motivation when developing learning experiences could help students make the transition to practicing design as an iterative process fraught with risk.

Keywords: Design education, risk, testing, performance anxiety, interaction design

Primary and secondary education in the United States is prescribed and linear, heaping pressures on students to perform on standardized tests and achieve high grades. However, the design process requires risk, posed as incremental "failures" inherent in the iterative process. These opposing conditions can create challenges for students who are accepted into design programs in higher education. For this reason, I developed a design research project in the scholarship of teaching and learning (SOTL) that exists at the intersection of performance-driven testing habits and risk-laden design process.

The objective of this research was to discover what curricular formats could encourage stu- dents to risk failure by attempting innovative outcomes that exceed prescribed learning objectives. Findings from this research was geared to inform the development of implementable curricular structures for facilitating learning that took into account the conditioned culture of students today. The result was the *Rewarding Risk* project, operated in the Graphic Design program at Miami University in Fall 2014 and Spring 2015.

Literature Review

Over the past ten years, teachers and researchers have reported increasing cases of performance anxiety in primary and secondary school students. This drive to achieve

high grades has caused these students to act out a range of damaging behaviors (Kessler, n.d.). The pressure to achieve high grades, especially on standardized tests like those administered to measure performance under the No Child Left Behind Act of 2001, has led to concerns for young adults' mental and physical health (Rubin, 2012). High-stakes tests like the SAT, ACT, and other state-specific exams have been found to hurt student learning while shifting teaching attention away from learning in content areas that were not on tests, including the arts (Amrein & Berliner, 2003). The culture of high- stakes testing and academic pressure to achieve high grades has conditioned students to be moti- vated to produce correct answers to defined problems.

Design "problems" are not jigsaw puzzles and seldom have correct "solutions" (Lasky, 2005). Designing involves a process of iteration instead of arriving at a single, "correct" solution on the first try (Norman & Verganti, 2014). Working iteratively requires that designers become comfort- able with trial and error—a process that is not easily learned (Hartford, 2011, p. 31). This process requires self-confidence as the problem and solution are simultaneously redefined and converge (Cross, 2006). While standardized testing hinges on "correct" answers, much of design involves reframing problems to arrive at ideal outcomes (Kolko, 2010). The complex nature of the design process is steeped in uncertainty and "working things out," requiring designers to become com- fortable taking risks (Poggenpohl & Winkler, 2010).

Context

The Graphic Design program at Miami University is situated in the Department of Art, which resides in the College of Creative Arts. The program is selective and requires applicants to submit a portfolio of work for review before they are admitted into the program. In advance of the port- folio review, prospective students are required to complete a range of Art Foundations courses, including courses in drawing, color theory, two and three-dimensional design, creative technology, and problem solving. About 20 students are admitted into the Graphic Design program each fall. A total of about 60 students are enrolled in the Graphic Design program each year, which consists of a "lock-step" schedule of design studios that spans three years. The program uses a cohort model, where a class of students are admitted into the program and stay together in the same graphic design cohort through completion of a BFA in Graphic Design. In Spring 2017, most stu- dents enrolled in the Graphic Design Major were natives of the mid-west United States, two stu- dents were from Korea and one was from China.

Research Methods

Surveys and instruments for this research project were developed in Fall 2014 and Institutional Review Board (IRB) Approval was obtained for the project prior to each phase of its operation. A website was developed and hosted at http://rewardingrisk.designworkbench.com where surveys were conducted for the project. The project was operated in several phases over the Fall 2014 and Spring 2015 semesters and featured three research activities:

- **Risk Taking and Success Survey:** Learn how Graphic Design students at Miami define suc- cess in their design coursework and if they would be motivated to take risks in order to achieve it.
- **Digital Broadsides Assignment:** Modify an existing assignment to test if Graphic Design students at Miami would take risks in their design coursework to achieve their success meas- ure.
- **Focus Group Follow-up:** Learn about risk-taking in design and the effects of the modified assignment structure.

Risk Taking and Success Survey

In Fall 2014, a survey was designed to learn how students in the Graphic Design program at Miami University defined success in their coursework. Participation in the survey was open for two weeks and was made available to all 59 students enrolled in the Graphic Design Major at Miami at that time. Participation was voluntary and participants remained anonymous. 19 students completed the survey, representing 32% of students in the program. The survey consisted of seven questions developed to determine how participants defined success in their coursework, if they would be willing to take risks to achieve these goals, and what rewards (if any) they would wish to receive for taking such risks. Most questions in the survey were responded to by clicking radio buttons, and one used a textbox where participants could share thoughts using their own words.

Options for radio buttons in the survey were developed to learn if students' overriding moti- vation was purely intrinsic (strong design skills and increased knowledge), extrinsic (praise form instructors and fellow students), or extrinsic and specifically quantified (high grades). An option was also provided to allow participants share if they were not yet sure what motivated them (I don't know yet). The questions and results of the survey can be found in **Table 1**.

Table 1: Risk Taking and Success Survey questions and responses.

Risk Taking and Success Survey (19 total responses)

QUESTION	TYPE	OPTIONS	RESPONSE
Which year are you currently completing in the graphic design program?	radio buttons	1st year in the program (typically Sophomores)	4
		2nd year in the program (typically Juniors)	10
		3rd year in the program (typically Seniors)	5
What most accurately captures "success" for you as a design student?	radio buttons	Strong design skills and increased knowledge.	15
		Praise from instructors and fellow students	3
		High grades	1
		I don't know yet.	0
Why is this important to you?	textbox		
Would you be willing to take risks in your work and possibly fail in order to earn what you selected above?	radio buttons	Yes	17
		No	2
What statement most accurately captures how you would feel if you were to try to create an innovative design solution and have it fail?	radio buttons	I learned something from it and I will keep trying	16
		I should have stuck to what I do well and not pushed it	2
		I must not have what it takes to be a designer	1
What would you say motivates you most when doing your design work?	radio buttons	Fear of failing in front of my instructor, parents, and/or fellow students	1
		It's what I'm "supposed to do"	0
		The fun of making things and solving problems	11
		Pride that everyone knows I created something excellent	5
		I don't know yet.	2
If you were given a reward for taking risks with your design on a project, which would you choose?	radio buttons	Praise from instructors and fellow students	6
		Bonus points on your grades	4
		A harder project the next time to push your skills further	2
		An excused absence to have a day off from class	3
		No reward would be necessary	4

The Digital Broadsides Assignment

An assignment from the Art 254, Fundamentals of Interaction Design course was modified so it could be used to learn if students would take risks to achieve their reported measures of success from the Risk Taking and Success survey. The Fundamentals of Interaction Design course was ideal for this research because it was a required course for all first-year Graphic Design Majors, ensuring most students would participate in the project before they had completed other front-end coding courses. Of the 19 first-year Graphic Design students enrolled in the course, 15 students reported they had no prior experience writing front-end code to create functioning websites. The fact that participants were new to front-end coding meant that using a code-heavy assignment would simulate the effects of taking risks when designing with new tools and applying new processes.

An assignment titled *Digital Broadsides* was selected to test student performance where design iteration and risk-taking was involved. This assignment was created in Spring 2014 and required students to write HTML and CSS to re-create a 19th or 20th century broadside poster using web fonts and limited imagery. *Digital Broadsides* was operated within the first four weeks of the ART 254, Fundamentals of Interaction Design course. For this project, students were assigned a digital image of a broadside poster. Over three class periods (one week), students participated in all-class critiques, revising and refining

their coded posters over that period of time. After the 1-week cycle was completed, the process was repeated a second time with each student attempting to re-create a different, more complex poster design. The two-week cycle resulted in the production of two different digital broadside posters created with HTML and CSS.

For this research project, the *Digital Broadsides* assignment was modified to learn if students would take risks in order to achieve measures of success indicated in the Risk Taking and Success Survey administered the previous semester. A majority of responses to this survey revealed that students' ideal success measure was "strong design skills and increased knowledge." Most students also responded that if they were to fail, they would not give up and would keep trying.

In Spring 2015, 19 students were enrolled in Fundamentals of Interaction Design course. This group of students was not assigned a *Digital Broadsides* poster to re-create as the way the assign- ment had been operated in 2014. Instead, students were allowed to select a level of difficulty they wished to attempt for the assignment. *Digital Broadsides* poster options were posted on the course website for students to download and these poster options were categorized in easy, medium, and hard difficulties as shown in **Figure 1**. Each student was instructed that once a difficulty level was selected, they could not switch to another difficulty level. Students were reminded that the focus of the assignment was learning key aspects of front-end coding instead of producing "perfect" work. The goal of this portion of the research project was to see if students would take risks by selecting challenging difficulty levels for the assignment, indicating they were willing to take risks to learn more advanced front-end coding skills. The rationale of this approach was if students truly felt that "strong design skills and increased knowledge" was their primary success measure, they would be likely to select a level of difficulty that would be beyond their current skill and comfort level.

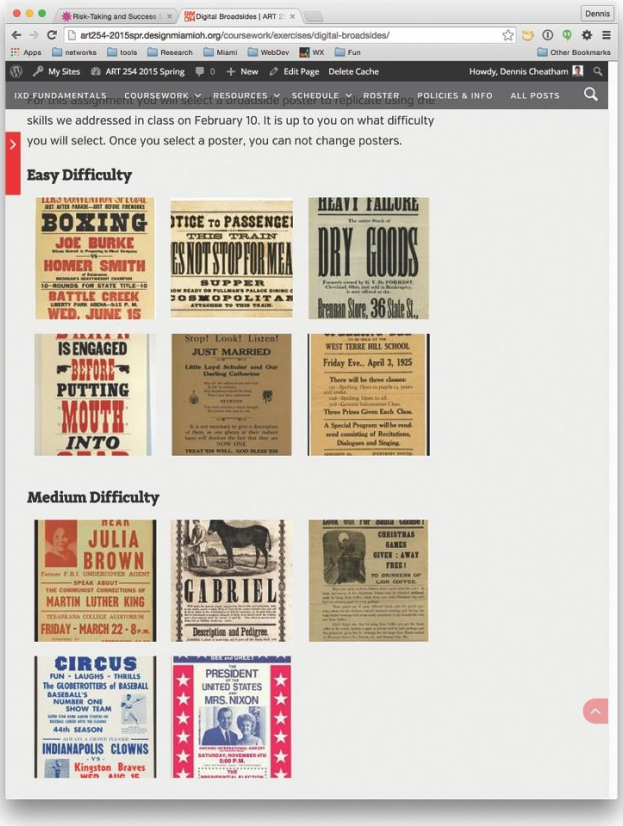

Figure 1: Digital Broadsides selections view from the class website depicting easy and medium difficulty levels

The assignment was started on a Monday and students brought their completed work to class on Wednesday to be displayed on a projected screen for critique and discussion. During critique, is- sues were diagnosed, successes and weaknesses were identified, and areas for growth were dis- cussed. The learning from this experience took place largely doing the critique session. After the initial critique, students completed a Digital Broadsides Feedback Survey where they shared their reactions to the experience. The details of this survey will be addressed below.

Following the completion of initial poster design, another round of the *Digital Broadsides* project was assigned. This time, participants had the opportunity to select another level of diffi- culty to attempt that was equal to or more difficult than their initial selection. This round of the assignment was operated over the next week and its process was identical to the first round.

Digital Broadsides Feedback Survey

After the *Digital Broadsides* assignment concluded, an anonymous survey was operated to learn participants' risk-taking experiences when completing the assignment. Questions and responses can be viewed in **Table 2**. The focus of the Digital Broadsides Feedback

Survey was to learn what difficulty level each participant selected, why they selected this level, and if they felt they took a risk when selecting this difficulty level. This survey was hosted on the research project website.

Table 2: Feedback from students on selecting their own assignment difficulty levels.

Digital Broadsides Feedback (14 total responses)

QUESTION	TYPE	OPTIONS	RESPONSES
Which Digital Broadsides difficulty level did you select?	radio buttons	Easy	4
		Medium	7
		Hard	3
Why did you select this difficulty level?	textbox		
Do you feel that the difficulty level you selected was "risky", based on your skill level when you selected it?	radio buttons	Yes	8
		No	7
Do you feel you increased your skill level through this exercise?	radio buttons	Yes	14
		No	0
Think about your work for this project. Which of the following statements best captures your feelings about it?	radio buttons	I'm glad I selected the difficulty level I did.	10
		I wish I had tried a more difficult level.	2
		I wish I had tried a less difficult level.	2
Did you have fun attempting to solve the problem of building your Digital Broadside?	radio buttons	Yes	9
		No	5

Analysis

Analysis of qualitative data gathered from the two surveys and the focus group was guided by processes in Jonny Saldana's *The Coding Manual For Qualitative Researchers* (Saldaña, 2009) and the discovery of themes in this data was assisted by Gerry and Russell's article *Techniques to Identify Themes* (Ryan & Bernard, 2003). Text and the focus group audio were uploaded to Dedoose, (SocioCultural Research Consultants, 2014) a qualitative research online tool, and inde- pendently reviewed by the author twice over the course of one week. This process resulted in 22 different codes that congealed into three distinct themes. Each of these codes were determined based on frequency counts and the most frequently occurring codes became themes which will be discussed below.

Results

The results of this study suggested that, when given a chance to own their learning in an environ- ment where risk was part of the iterative process, most students chose to challenge themselves. Written responses revealed that taking risks was still a concern for students and that they feel pressure to get high grades in their coursework. Findings highlighted the importance of process- centric assignment objectives for shifting

students' attitudes toward attempting untried approaches.

The initial survey for this study (Represented in **Table 1**) serves as the baseline assessment of participants attitudes on risking failure in coursework and their willingness to take risks to succeed. 15 out of the 19 participants (79%) stated that "strong design skills and increased knowledge" was their ideal success measure and 17 out of 19 (89%) responded they would take risks to achieve their goals. A majority (16 out of 19, 84%) stated if their attempted design failed, they would not give up and would keep trying. The most motivating reason for designing according to participants was "the fun of making things and solving problems" (11 out of 19). The final question of this survey which addressed participants' ideal rewards for taking risks, did not render a clear prefer- ence.

Several responses to the question why participants selected "strong design skills and increased knowledge" as an ideal success measure signified intrinsic motivators were especially important for driving achievement.

> I believe the ability for a designer to learn new concepts and skills outweighs grades and style... – A Graphic Design Senior

> The best feeling for me personally after taking a risk happens the night before I turn the project in. It is a great feeling knowing you went for something that could backfire and trying it anyway... – A Graphic Design Senior

The Digital Broadsides Assignment portion of the research allowed students to select their own level of risk on an assignment. Following this assignment, participants shared their thoughts via the Digital Broadsides Feedback survey presented in **Table 2**. Of the 14 students who participated in the survey, 10 (71%) selected "medium" or "hard" difficulties. 10 out of 14 participants were "glad they selected the difficulty they did." These 10 participants were among the group that se- lected the most difficult levels (medium and hard), which suggests that risk-taking was acceptable for those who were motivated to grow their knowledge and skills. A comparison of work from the 2014 class to the 2015 class revealed significant improvement in the quality of the aesthetic of the posters as well as students' coding skills.

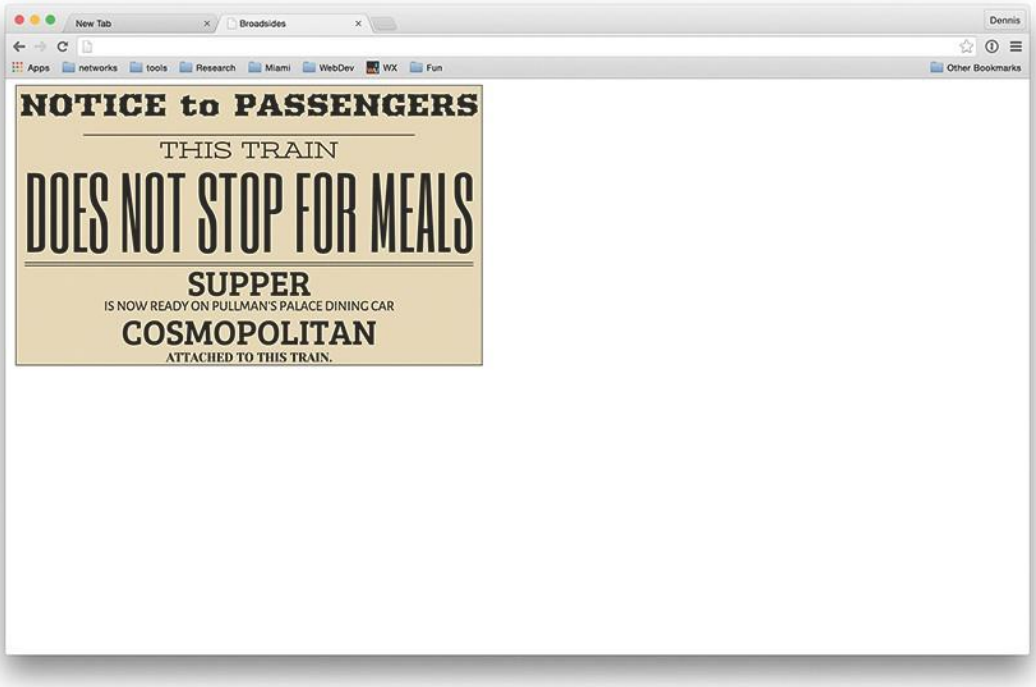

Figure 2: Digital Broadside student work from 2014

Figure 3: Digital Broadside student work from 2014

Figure 4: Digital Broadside student work from 2015

Figure 5: Digital Broadside student work from 2015

Focus Group

Two weeks after the completion of the Digital Broadsides Assignment, a focus group was operated with students in the Fundamentals of Interaction Design course to discuss topics explored in the research project. This semi-structured focus group included questions that covered topics like the design process, academic pressures and grades, and barriers that inhibit experimentation. The fo- cus group lasted one hour. This session was designed to bring together all of the topics addressed by the project into a more informal discussion. An audio recording was captured during the session and consent was obtained by all participants.

Figure 6: Students from the Fundamentals of Interaction Design course participating in the focus group

During the focus group, students were asked about risk-taking when it comes to solving difficult tasks in design. In the Fundamentals of Interaction Design course, most coursework was completed outside of scheduled class meetings. Students shared that working through front-end coding as- signments was typically not a solitary process. Students indicated that they preferred to work to- gether to solve challenging front-end coding problems—sharing discovered tutorials and resources at places like Stack Overflow, W3 Schools Online, and GitHub. The unfamiliarity of front-end coding prompted the class to collaborate more than they usually did when producing print-based design work.

Both survey data and focus group responses revealed that students valued working through and overcoming challenging problems. Several quotes from the focus group portion of the research are evidence of this sense of accomplishment:

> "You feel like you have so much power when you solve a coding problem."
>
> "I don't know how to do that, but search how to do it and figure it out. Exploring some- thing new and figuring it out is fun and rewarding. It's exciting."
>
> "Even when you feel like you know what you're doing, it still doesn't do what you want so you have to put a lot more effort into making it look the way you want it to look—so I think it just feels more rewarding."

These statements and the fact that most students indicated they would be willing to take risks and keep trying if they failed suggests that a sense of accomplishment is a valuable learning outcome for design curriculum. This suggests that assignments that are designed to evoke senses of accom- plishment on an emotional level could increase risk-taking and learning in coursework. Further work to explore how Vroom's Expectancy Theory could be applied to design learning and achieve- ment is warranted (Hoffman-Miller, 2013).

Limitations

The limited sample size of this research reduces the generalizability of findings and positions the project as an exploratory study. While students in 2014 and 2015 completed the same assignment, students in the 2015 class may have been more aware of the "risk" nature of the project because they were primed by the initial risk survey, possibly leading to increased effort on the assignment. In spite of these limitations, findings still reveal areas for potential research into how learning and risk-taking may be encouraged.

Conclusion

Students who have been conditioned to find correct answers and the formulas that can produce them are locked into a mode of summative assessment that can be closed off to iterative processes involved in design. In order to make risk part of learning, a focus on formative assessment is im- portant. The *Digital Broadsides* assignment where students could select their own assignment dif- ficulty level resulted in most students gaining valuable skills, but it also facilitated learning where *process* was the main focus.

Since completing this project, I have begun to develop several assignments to test how process may become a more important part of design coursework than final outcomes. By weighting pro- cess work grading heavier than final outcomes, students may become more attentive to the iterative process, striving to produce higher quality versions instead of trying to isolate the best "final" solution. This project has also revealed that allowing students to self-select assignment difficulty levels may have some value for helping students own their learning and take on personalized chal- lenges. While this small study revealed that most students selected a more difficult level than would have been originally assigned, more research is needed to test this notion.

Risk is inherent in the design activity. The iterative process involves trial and error, and risks must be taken in order to innovate and refine design outcomes. In order to explore how to

encourage risk-taking that may lead to innovative design outcomes, priority should be placed on developing new models for facilitating learning and assessing work.

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